

OBSTETRIC OUTCOMES OF ADOLESCENT PREGNANCIES IN THE EASTERN MEDITERRANEAN REGION OF TURKEY

DOĞU AKDENİZ BÖLGESİ'NDEKİ ADÖLESAN GEBELİKLER VE OBSTETRİK SONUÇLARI

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ABSTRACT

Objective: To compare the obstetric and neonatal outcomes of pregnant women in the adolescent age group with the outcomes of those in reproductive age group in our region.

Materials and Methods: The outcomes of 539 adolescent pregnancies between the ages of 10-19 years and 644 adult pregnancies between the ages of 20-35 years who gave birth in Osmaniye State Hospital Obstetrics and Gynecology Clinic between January 2013 and January 2015 were analyzed retrospectively.

Results: The mean age of the adolescent group was determined as 17.60 ± 1.21 , and the mean age of the adult group was detected as 26.77 ± 3.94 . Compared to reproductive age group, in adolescent age group gestational diabetes mellitus (4.5%, 9.2%, respectively) and preterm birth (32.5%, 19.9%) incidence was detected to be significantly high ($p < 0.05$). 1-minute and 5-minute APGAR scores were observed significantly low in adolescent age group.

Conclusion: It is observed that adverse maternal and perinatal results are increased in pregnant women in adolescent age group compared to reproductive age group.

Key words: adolescent pregnancy; obstetric outcome; preterm birth

ÖZET

Amaç: Bölgemizdeki adölesan yaş grubundaki gebelerin obstetrik ve neonatal sonuçlarını reproduktif yaş grubu gebelerin sonuçları ile karşılaştırmak.

Gereç ve Yöntem: Osmaniye Devlet Hastanesi Kadın Hastalıkları ve Doğum Kliniği'nde Ocak 2013 - Ocak 2015 tarihleri arasında doğum yapan 10-19 yaş arası 539 adölesan gebe ve 20-35 yaş arası 644 erişkin gebenin sonuçları retrospektif olarak incelendi. Hastaların reproduktif öyküleri ve obstetrik sonuçları kaydedildi. Verilerin analizinde SPSS versiyon 17 programı kullanıldı. İstatistiksel anlamlılık $p < 0.05$ düzeyinde değerlendirildi.

Bulgular: Adölesan yaş grubundaki gebelerin yaş ortalaması 17.60 ± 1.21 , reproduktif yaşta gebelerin yaş ortalaması 26.77 ± 3.94 olarak saptandı. Adölesan yaş grubunda reproduktif yaş grubuna göre gestasyonel diyabet (%4.5, %9.2 sırasıyla) ve erken doğum (32.5%, 19.9%) görülme sıklığı anlamlı olarak yüksek saptandı ($p < 0.05$). 1. ve 5. dakika APGAR skorları adölesan yaş grubunda anlamlı olarak düşük izlendi. Preeklampsi, ölü doğum ve anemi oranları açısından gruplar arasında anlamlı bir fark saptanmadı.

Sonuç: Adölesan yaş grubundaki gebelerde reproduktif yaş dönemindeki gebelere göre olumsuz maternal ve perinatal sonuçların arttığı izlenmiştir.

Anahtar kelimeler: adölesan gebelik; obstetrik sonuçlar; preterm doğum

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INTRODUCTION

According to World Health Organization, adolescence is defined as the transition period from childhood to adulthood and covers the age range of 10-19 years (1). There are 16 million adolescent pregnancies resulting with birth annually and these constitute 11% of all births. 95% of the adolescent pregnancies result in miscarriage and these occur in low and medium income countries (2). However, adolescent pregnancies are still an important issue for developed countries. Especially in USA, although the adolescent pregnancy and birth rate are in tendency to decrease, it still has the highest values among the developed countries (3). In our country, adolescent pregnancy incidence is 4.6% (4).

The adolescent stage is characterized with increased metabolic activity, somatic development and psychological differentiation; and in the absence of these ideal conditions required by these changes, the individual's health may be negatively affected. It is known that the adolescents do not have sufficient knowledge of contraception methods, conception and its results compared to the older pregnant women (5). In pregnancies in this period, there may be an increase in labor complications and postnatal complications both due to lack of care and due to insufficient preparations for labor and parenthood before and during pregnancy. Problems like anemia, abortus and preterm birth associated with malnutrition are also more common in adolescent pregnancies (6). Besides, because of incomplete bone development in adolescents, an increase in cesarean section ratios associated with cephalopelvic disproportion was reported (7).

In our study, we aimed to evaluate the obstetric and neonatal outcomes of adolescent pregnancies in our city, and to compare these findings with adult group pregnancies in terms of maternal and neonatal health.

MATERIAL AND METHOD

Our research which evaluates the obstetric results of adolescent pregnancies between 10-19 years old was conducted in Osmaniye State Hospital Gynecology Clinic. The study protocol was approved by the Ethical Committee of Cukurova University School of Medicine. The results of patients between 10-35 years old who gave birth between January 2013 and January 2015 were scanned retrospectively. Study exclusion criteria were pregnancies after the age of 35 years, multiple pregnancy, chronic systemic diseases, smoking and alcohol consumption. 1183 patients were incorporated to the study in total. Patients were separated in two groups as the adolescent pregnancy group between the ages of 10-19 years and adult pregnancy group (control group) between the ages of 20-35 years. Obstetric histories, modes of delivery, delivery weeks, pregnancy complications (gestational diabetes mellitus, preeclampsia), parturition hemoglobin values, neonatal results of the patients were recorded. The deliveries before the 34th gestational week were evaluated as preterm birth.

SPSS (Statistical Package for the Social Sciences) version 17 program (SPSS Inc., Chicago, IL, USA) was used for the analysis of the data obtained. In statistical

analysis, the distribution properties of data were detected with Kolmogorov-Smirnov test, and the analysis of data with normal distribution was performed with Independent sample T test and the analysis of the data without normal distribution was performed with Mann Whitney U test. For the analysis of categorical data Chi-Square test was used; when Chi-Square conditions were not fulfilled Fisher Exact test was used. Numeric variables were reported in mean \pm standard deviation (SD) and categorical variables were reported in percentage. Significance was evaluated at $p < 0.05$ level.

RESULTS

There were 539 cases in the adolescent group between the ages of 10-19 years old who were included to the study and the average age was determined as 17.60 ± 1.21 (minimum 13; maximum 19). In the adult control group between the ages of 20-35 years there were 644 cases and the average age was determined as 26.77 ± 3.94 (minimum 20; maximum 35).

No difference was observed between adolescent pregnancies and adult pregnancies in terms of preeclampsia ($p=0.52$), the incidence of gestational diabetes mellitus was found more in adults group compared to adolescent pregnancy (9.2%, 4.5%, respectively, $p < 0.001$) (Table 1). Premature delivery ratio in adolescent group was detected as 32.5% in adolescent group and as 19.9% in adult group ($p < 0.001$). Stillbirth ratios in adolescent and adult pregnancies were respectively 1.1% and 0.5%, and no statistically significant difference was observed. Although the neonatal APGAR score mean values at 1-minute and 5-minute were within normal limits in both groups, adolescent group APGAR scores were found to be significantly lower in adult group.

DISCUSSION

Adolescent pregnancies which are defined as between the ages of 12 and 19 years constitute an important problem in the whole world. There is a higher probability that the adolescent mothers are exposed to negative pregnancy outcomes and mortality related to maternity compared to adult mothers (4). The incidence of adolescent pregnancies in the world varies between 3.2% and 42% (6, 8). In the literature, the adolescent pregnancy ratios were reported to be 0.9-21% in European countries, 10.6% in USA, 0.4-4.2% in Asia and 8-50% in Africa (8, 9). In Turkey, the adolescent pregnancy ratio was detected as 0.9% in 1990 whereas this ratio was 4.6% in 2013 (4). In our study, 1183 pregnant women, of which 539 women were at the adolescent age, who applied to Osmaniye State Hospital Obstetrics and Gynecology Clinic were analyzed. Adolescent pregnancies constitute 8% of all the pregnant women who gave birth in Osmaniye State Hospital Obstetrics and Gynecology Clinic and this ratio was found to be high compared to the overall adolescent pregnancy ratio in Turkey (10). Considering that our study region is close to Syria, we think that the migration rate increased towards our country due to the war environment in Syria contributed to this situation.

Table 1. Reproductive history and obstetric outcomes of women in groups

| | Adolescent mothers n (%) | Adult mothers n (%) | p value |
|--------------------------------|-----------------------------|------------------------|------------------|
| Gravida | | | |
| 1 | 402 (74.6) | 119 (18.5) | <0.001 |
| 2 | 120 (22.3) | 211 (32.8) | |
| 3< | 17 (3.1) | 314 (48.7) | |
| Preeclampsia | 12 (2.2) | 11 (1.7) | 0.52 |
| GDM | | | |
| no | 406 (75.3) | 522 (81.1) | <0.001 |
| yes | 24 (4.5) | 59 (9.2) | |
| Unfollowed | 109 (20.2) | 63 (9.8) | |
| Hemoglobin* | 11.11 ± 1.43 | 11.19 ± 3.85 | 0.476 |
| Mode of delivery | | | |
| Vaginal delivery | 384 (71.2) | 334 (51.9) | <0.001 |
| C-section | 155 (28.8) | 310 (48.1) | |
| Preterm birth | 175 (32.5) | 128 (19.9) | <0.001 |
| Birth weight (gram)* | 3086 ± 510.6 | 3195 ± 496.8 | <0.001 |
| Birth height (cm)* | 49.53 ± 2.3 | 49.72 ± 2.08 | 0.021 |
| Birth head circumference (cm)* | 35.19 ± 3.31 | 35.51 ± 1.62 | <0.001 |
| APGAR 1-minute | 8.70 ± 1.19 | 8.85 ± 0.83 | 0.002 |
| APGAR 5-minute | 9.75 ± 1.15 | 9.86 ± 0.83 | 0.008 |
| Stillbirth | 6 (1.1) | 3 (0.5) | 0.314 |

*Data are presented as mean ± SD, GDM: Gestational diabetes mellitus

An important problem in adolescent pregnancies is the increase in preterm birth rate. Biological immaturity of the pregnant women, immature skeleton system and socio-demographical factors (low education level, low socioeconomic level, etc.) may be shown among the reasons for this (11). In the literature, there are many studies indicating that adolescent pregnancies are associated to the increased preterm deliveries (12-14). In a study conducted in Utah with more than 130.000 primipara pregnant women with singleton gestation at the ages of 13-24 years old were analyzed (15). When compared to 20-24 years old group, the risk of delivering an infant who had low birth weight and premature infant was found higher in pregnancies at the age of 17 years or younger who had education level in compliance with their age. When the results of a study conducted by Satin et al. on 16500 pirimipara pregnant women, the preterm delivery ratio in women who gave birth between the ages of 11-16 years old was found significantly increased compared to older pregnant women (12). On the other hand, in the study of Taner et al. with 402 adolescent pregnant women, the preterm

birth ratio was found as 10.9% and no significant difference was found. However, they detected the ratio of delivering an infant who had low birth weight as 76.5% and they found this difference from the adult group at a statistically significant level (16). In our study, preterm birth ratio in adolescent pregnancies was observed as significantly increased compared to pregnancies at older ages. Parallel to this, the head circumference measurement and birth weights were detected significantly lower than the control group. Preeclampsia and gestational diabetes were of the perinatal problems monitored in adolescent pregnancies (13). In a study which was conducted by Bozkaya et al., the preeclampsia incidence in adolescent pregnancies (9.9%) was determined considerably more than adult pregnancies (4%) (17). It was asserted that the higher preeclampsia incidence in adolescent pregnancies may be explained with immature immune system and few amount of antibodies which block the chorionic villuses (18). But in our study, the preeclampsia ratio in adolescent pregnancies was not found to be significantly different than adult pregnancies. Likewise, also in the

study conducted by Taner et al. no significant difference was observed between adolescent pregnancies and adult pregnancies in terms of preeclampsia incidence (16). Another important problem that we encounter in adolescent pregnancies around the world is anemia (13, 19). In more than 50% of the pregnant women in developing countries there is iron deficiency anemia. Due to the simultaneous growth of both the adolescent's herself and the baby's, the iron reserves of the body are consumed rapidly. Therefore, the anemia that we frequently encounter in adult pregnancies becomes even more explicit in adolescent pregnancies (20). In the study conducted by Melekoğlu et al., anemia incidence in adolescent pregnancies was found higher than the adult pregnancies (21). However, in the study of Akin et al. the anemia prevalence in adolescent pregnancies in the age group of 15-19 years old was higher than pregnancies in all other age groups, but the difference between them was not found statistically significant (22). Similarly, according to a study conducted in Erzurum region, no statistically significant difference was found between the age of the mother and the anemia in adolescent pregnancies (23). Also in our data, no significant difference was observed between two groups in terms of hemoglobin levels.

Due to the incomplete development of the bone pelvis in adolescents, it was asserted that the ratio of cesarean section associated with cephalopelvic disproportion was increased (7). However, in recent studies it was detected that cesarean section ratios were lower in adolescent pregnancies compared to adult pregnancies (24). Likewise, in studies of Taner et al. and Melekoğlu et al., the cesarean section ratios in adolescent pregnancies were detected lower compared to adult pregnancies (16, 21). According to Turkey Population and Health Research 2003 data, cesarean section ratios in adolescent pregnancies and in pregnancies at older ages were detected as 11.5% and 22.5%, respectively (25). In our study, the cesarean section ratio was monitored as significantly lower in adolescent pregnancies than the control group. We associate our cesarean section ratios in adult pregnancies higher than adolescent pregnancies with the approach of adult pregnant women with cesarean section history whose multiparity ratio is statistically higher to give birth through cesarean section again in their recurring pregnancies.

When other perinatal results were evaluated, 1-minute and 5-minute APGAR scores in adolescent pregnancies were monitored lower than adult pregnancies, but detected within the normal limits in both groups. In a study conducted by Ayyıldız et al. in 2014, a significant difference was found between adolescent pregnancies and the pregnancies at an older age in terms of mean 1-minute and 5-minute APGAR scores of the infants (26). In the study of Taner et al., it was reported that there were no significant differences between the mean 1-minute and 5-minute APGAR scores of the infants of adolescent mothers and non-adolescent mothers (16). In the literature, stillbirth ratio was determined to be higher in adolescent pregnancy like increased neonatal complications, birth asphyxia, preterm birth (27). In a two-centered study conducted by Arkan et al., stillbirth

ratio in adolescent pregnancies was found higher compared to the pregnant women between 20-35 years old who were chosen as the control group (14). Also in a study in the Netherlands, the stillbirth risk in pregnant women between 15-19 years old was indicated to be higher than the women older than 20 years (28). In our study, although no significant differences were detected between adolescent pregnancies and adult pregnancies, stillbirth ratio in adolescent pregnancies was higher. Similarly, in the study of Keskinöglü et al. although the stillbirth ratio in adolescent pregnancies was 13.7% no statistically significant difference was detected between two groups (6).

In our study, the gestational diabetes mellitus incidence in adolescent pregnancies was monitored significantly lower compared to adult pregnancies in the control group. This may be explained with the increase of predisposition to diabetes associated with the increase of insulin resistance at older ages (13). Nonetheless, as the adolescent pregnancy group did not attend to polyclinic follow-up regularly, approximately 20% of the pregnant women were detected not have their glucose loading tests performed. Because the majority of adolescent pregnancies have families with low socio-economic and education level, they may not be aware of the importance of the routine gestational follow-up or the pregnant women are not brought to the control visits by their relatives; thus this may be the cause of significantly high nonattendance ratio to the follow-ups. When the socio-economic levels of adolescent pregnant women were analyzed in a study of Keskinöglü et al., it was determined that 99.7% of the adolescents were from unemployed families and that 59.8% did not have a health insurance (6). It is understood from the data of Turkey Population and Health Research conducted in 2013 that adolescent pregnancy ratio in families with the highest socio-economic level is 1%, whereas it reaches 7.7% among individuals living in areas with lower socio-economic level (4). When it is analyzed in terms of education level, while 17% of the women who were not educated or who did not complete their primary education start bearing children in adolescent period; this ratio decreases to 8% among women who at least finished their primary education (4).

There are few limitations of the present study. As the risky pregnancies are mostly referred to a tertiary health center, our study does not involve homogeneous patient and control groups. However, the absence of the socio-demographical properties like education level and socio-economic status of the pregnant women who enrolled into our study is the other limitation of our study. Thus, further multicenter studies are required to clarify the effects of different education and socio-economic levels on adolescent pregnancy.

CONCLUSION

Adolescent pregnancies are an important health problem around the world. As per the results of Turkey Population and Health Research 2013, although the adolescent pregnancy ratio decreased to 4.6% from 6% in 2008, it still constitutes an important problem in Turkey both socially and medically. Adolescent

pregnancies have more risk than pregnancies at older ages in terms of maternal and fetal adverse outcomes. Though we could not analyze the socio-demographic properties in our study, it was indicated in the studies covering society surveys and socio-demographical data that adolescent pregnancies are more common in regions with low socio-economic and education levels. Therefore, it is primarily necessary to prevent adolescent pregnancies through attempts to increase the education and welfare level of the society. Then, what should be considered in the second place is trying to reduce the perinatal complications with may occur in the existing adolescent pregnancies through the most ideal antenatal follow-up possible.

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